10th Guiding Model (Chemistry 2026)

1- (X, Y) are two elements from the first transition series. The number of unpaired electrons is equal in both (X^{3+}) and (Y^{3+}), while the number of unpaired electrons in the (X^{4+}) ion is greater than that in the (Y^{4+}) ion.

Which of the following are the uses of these two elements?

(a) Element X: Manufacturing modern dry cell batteries
Element Y: Manufacturing railway tracks.

(b) Element X: Manufacturing railway tracks.
Element Y: Manufacturing modern dry cell batteries.

(c) Element X: Hydrogenation of oils.
Element Y: Manufacturing MiG fighter jets.

(d) Element X: Metal coating.
Element Y: Hydrogenation of oils and heating coils.

2-(X, Y) are two elements from the first transition series that having the same number of unpaired electrons. The number of unpaired electrons of element (X) decreases when converting from the (2+) state to the (3+) state.

Which of the following choices is correct?

(a) The density of element (X) is greater than that of element (Y).
(b) The atomic radius of element(Y) is greater than that of element (X).
(c) The atomic mass of element (Y) is greater than that of element (X).
(d) The atomic number of element (X) is greater than that of element(Y).

3- Which of the following describes the alloy that is used in the manufacture of car springs?

(a) Carbon atoms occupy the spaces between the crystal lattice, and some iron atoms are replaced by manganese atoms.
(b) Carbon atoms occupy the spaces between the crystal lattice, and some iron atoms are replaced by vanadium atoms.
(c) Vanadium atoms occupy the spaces between the crystal lattice, and some iron atoms are replaced by carbon atoms.
(d) Vanadium atoms occupy the spaces between the crystal lattice, and some iron atoms react with carbon atoms.

4- Which of the following compounds, in their solutions, can easily reduce the Manganese ion (Mn^{7+}) to (Mn^{2+})?

a) $ScCl_3$
b) $Ti(NO_3)_4$
c) $FeSO_4$
d) $ZnCl_2$

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5. The following table shows the electronic configuration of the cations of some elements in the first transition series.

The cation	Electronic Configuration
X^{2+}	$_{18}Ar, 3d^6$
Y^{4+}	$_{18}Ar, 3d^6$

Which of the following options represents the elements (Y, X)?

	X	Y
a)	Used in reinforced concrete	has 5 stable isotopes
b)	Used in cooking utensils	has 12 radioactive isotopes
c)	Diamagnetic	Paramagnetic
d)	Largest in density	used in the treatment of tumors

6- Dilute hydrochloric acid can be used to distinguish between:

(a) Sodium carbonate and sodium bicarbonate
(b) Sodium sulfate and sodium chloride
(c) Sodium carbonate and lead bicarbonate
(d) Barium carbonate and magnesium bicarbonate

7- When hot, concentrated sulphuric acid is added to solid salt (X), a mixture of gases is released. When diluted sulphuric acid is added to a solution of salt (X), a white precipitate forms that is insoluble in dilute acids.

-The chemical formula for salt (X) is:

(a) Sodium iodide NaI
(b) Calcium bromide $CaBr_2$
(c) Calcium carbonate $CaCO_3$
(d) Lead sulphite $Pb(SO_3)_2$

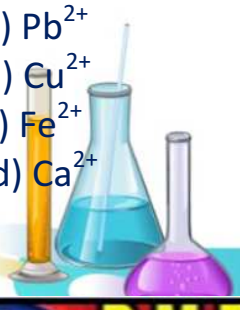
8- When barium chloride solution is added to separate solutions of two salts, (X) and (Y), a precipitate forms with each, both precipitate dissolves in dilute hydrochloric acid.

- The anions of salts (X) and (Y) are:

(a) (X): PO_4^{3-}, Y: SO_4^{2-}
(b) (X): SO_4^{2-}, Y: CO_3^{2-}
(c) (X): PO_4^{3-}, Y: CO_3^{2-}
(d) (X): SO_4^{2-}, Y: NO_3^-

9- The opposite figure shows experiments to detect a cation in its solution using three different reagents. Which of the following represents this cation?

a) Pb^{2+}
b) Cu^{2+}
c) Fe^{2+}
d) Ca^{2+}



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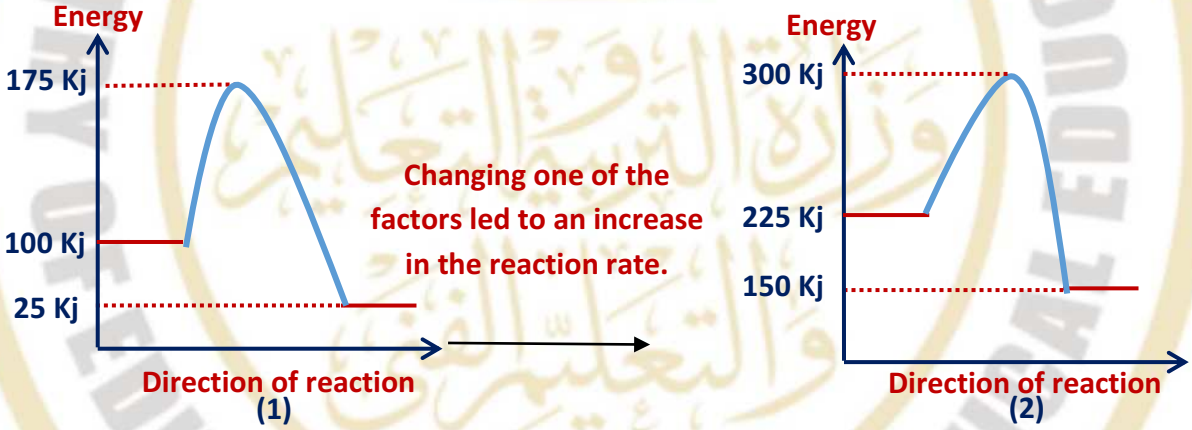
10- A solution contains a mixture of anions (sulphate, chloride, and sulphide).
-If you have solutions of silver nitrate, calcium hydroxide, and copper nitrate.
Which of the following is the correct order for using these solutions to separate these anions from each other as a precipitate?

(a) Copper nitrate, then silver nitrate, then calcium hydroxide
(b) Calcium hydroxide, then silver nitrate, then copper nitrate
(c) Silver nitrate, then calcium hydroxide, then copper nitrate
(d) Copper nitrate, then calcium hydroxide, then silver nitrate

11. Which of the following changes a system from reversible to complete?

(a) Add a few drops of acetic acid after the ethyl acetate ester has formed
(b) Adding an excess of water to a saturated solution containing an insoluble amount of Silver nitrate
(c) Closing the container containing zinc reacts with concentrated sulphuric acid
(d) Closing the container in which nitrogen and hydrogen gases react to prepare ammonia

12. Figure (1) represents a chemical reaction, and Figure (2) represents the same reaction after a change in one of the factors that caused an increase in the reaction rate.



Which of the following represents this factor?

(a) Increasing the reaction temperature
(b) Increasing the surface area of the reactants
(c) Adding a catalyst to the reaction medium
(d) Increasing the number of moles of reactants per unit volume

13- When 0.2 mol of sulphur trioxide gas is heated in a closed container of one liter, 10% of it decomposes into sulphur dioxide and oxygen gases upon reaching Equilibrium.

-Which of the following represents the value of K_C for this reaction.

a) 1.2×10^{-4} b) 1.1×10^{-2} c) 90 d) 8100

14- One liter of alkaline solution contains (0.25) mol and has a degree of dissociation of (2×10^{-2})M. Its pOH value is:

a) 11.7 b) 11.45 c) 2.55 d) 2.3

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15- When water is added to a sodium hydroxide solution:

(a) The concentration of hydroxide ions decreases and the pOH value decreases

(b) The concentration of hydroxide ions increases and the pH value decreases

(c) The number of produced ions remains constant and the pH value increases

(d) The number of produced ions remains constant and the pOH value increases

16- The following equilibrium reaction occurs in a closed container:

$C_{(s)} + CO_{2(g)} \rightleftharpoons 2CO_{(g)}$, $\Delta H = +127$ kJ/mol

Which of the following changes increases the amount of carbon monoxide gas without affecting the Kc value of the reaction?

(a) Increasing the temperature of the system

(b) Adding extra amount of carbon

(c) Decreasing the volume of the reaction vessel

(d) Increasing the volume of the reaction vessel

17- The following reactions are non-spontaneous:

$Z_{(s)} + Y^{+2}_{(aq)} \rightarrow Z^{+2}_{(aq)} + Y_{(s)}$

$Y_{(s)} + X^{+2}_{(aq.)} \rightarrow Y^{+2}_{(aq)} + X_{(s)}$

Which of the following is true for the following reaction:

$$X_{(s)} + Z^{+2}_{(aq.)} \rightarrow X^{+2}_{(aq.)} + Z_{(s)}$$

a) Spontaneously and (X) is a reducing agent.

b) Non-spontaneous and (Z) is a reducing agent.

c) Non-spontaneous and (X) is an oxidizing agent.

d) Spontaneously and (Z^{2+}) is a reducing agent.

18- During the recharging of a lithium-ion battery.

- Which of the following is correct?

(a) The mass of the cathode increases and the concentration of lithium ions in the Electrolyte decreases.

(b) The mass of the anode increases and the concentration of lithium ions in the Electrolyte increases.

(c) The mass of the cathode decreases and (Co^{4+})ions are reduced to (Co^{3+}).

(d) The mass of the anode decreases and (Co^{3+}) ions are oxidized to (Co^{4+}).

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19- When (9650) coulombs are passed through molten copper compound, (0.1) mol of copper is deposited at one electrode and (0.05) mol of gas is released at the other electrode. Which of the following represents the reactions occurring at both the anode and cathode of the cell?

	Cathode Reaction	Anode Reaction
a)	$4Cu^{+}_{(l)} + 4e^{-} \rightarrow 4Cu_{(s)}$	$2O^{2-}_{(l)} \rightarrow O_{2(g)} + 4e^{-}$
b)	$2Cu^{2+}_{(l)} + 2e^{-} \rightarrow Cu_{(s)}$	$2Cl^{-}_{(l)} \rightarrow Cl_{2(g)} + 2e^{-}$
c)	$2Cu^{+}_{(l)} + 2e^{-} \rightarrow 2Cu_{(s)}$	$2Cl^{-}_{(l)} \rightarrow Cl_{2(g)} + 2e^{-}$
d)	$4Cu^{2+}_{(l)} + 4e^{-} \rightarrow 2Cu_{(s)}$	$2O^{2-}_{(l)} \rightarrow O_{2(g)} + 4e^{-}$

20- Three metals (X, Y and Z)

X: A solution of its salt cannot be stored in a container made of metal (Z).

Y: A solution of its salt can be stored in a container made of metal (Z).

- Which of the following expresses the correct order of metals (X, Y, Z) according to their oxidation potentials?

a) Y < X < Z b) X < Z < Y

c) Z < X < Y d) X < Y < Z

21- Which of the following describes what happens when calcium chloride is used in The salt bridge of a Daniel cell?

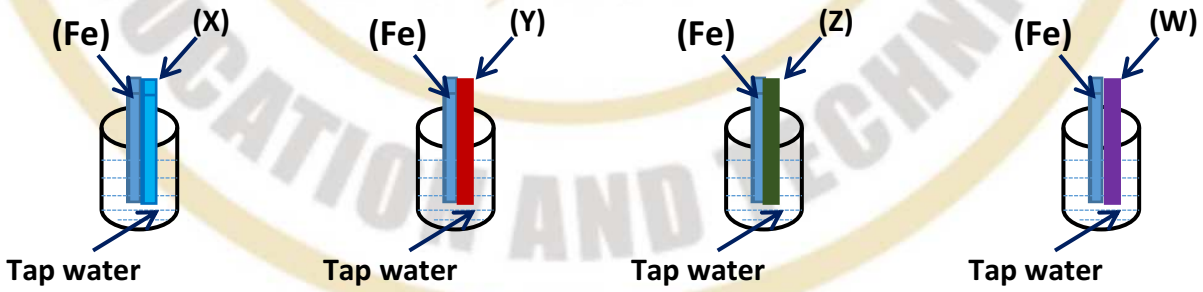
(a) The concentration zinc ions at the anode decreases

(b) The cell stops operating after a very short time

(c) The concentration of copper ions at the anode increases

(d) The cell continues to produce an electric current

22- From the following figures:



"Given that the oxidation potentials of the metals (X, Y, Z and W) are (+0.12 V, +0.74 V, -0.4 V, +1.27 V) respectively, and the oxidation potential of iron is (+0.44 V)"

- Which of the following shows the correct order of the tube in which iron corrodes, Based on the rate of corrosion?

(a) (4) < (2) (b) (2) < (4)

(c) (1) < (3) (d) (3) < (1)

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23- Which of the following structural formulas represents a saturated aliphatic hydrocarbon?

a) $CH_3\ (CH_2)_2CHCH_2$ b) C_4H_6

c) $CH_3\bar{C}(CH_3)_3$ d) $CH_2C(CH_3)_2$

24- (X) and (Y) are saturated hydrocarbon compounds.(3)moles of CO_2 are produced When one mole of either burned,.

- What is the number of methylene groups in each of (X) and (Y)?

(a) (1), (3) (b) (2), (3)

(c) (0), (1) (d) (2), (0)

25- Which of the following processes produces a compound that does not decolorize an acidified potassium permanganate solution?

a) Catalytic hydration of ethene b) Catalytic hydration of propene

c) Catalytic hydration of ethyne d) Catalytic hydration of propyne

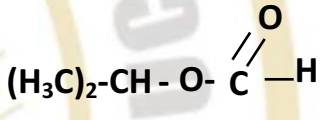
26- Which of the following represents the IUPAC name of the compounds resulting from the ammonolysis decomposition of the compound shown in the figure?

a) 2-Propanol and formamide

b) 2-Propanol and methanamide

c) Isopropyl alcohol and acetamide

d) 1-Propanol and ethanamide



27- Compound (X) is produced by alkaline hydrolysis of one isomer of $C_5H_{11}Br$,that does not contain a methylene group, and removes the purple color of acidified potassium permanganate solution.

- Which of the following represents the IUPAC name of compound (X)?

a) 2,2-Dimethyl-1-propanol b) 2-methyl-2-butanol

(c) 2-methyl-3-butanol d) 3-methyl-2-butanol

28- (X and Y) Organic Compounds

X: Has the molecular formula C_5H_{10}

Y: Produced by the addition of HBr to compound (X) and is named according to IUPAC "2-bromo-2-methyl-butane"

- Which of the following represents the structural formula of compound (X)?

a) CH_3-CH=CH-CH_2-CH_3 b) $(CH_3)_2$C=CH-CH_3

c) CH_2=CH-CH(CH_3)-CH_3 d) CH_2=CH-CH$(CH_3)_2$

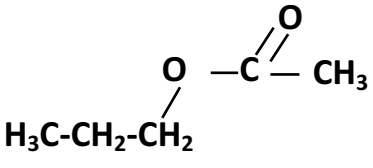
29- Which of the following compounds reacts under suitable conditions to produce the corresponding compound?

(a) Propanoic acid and methanol

(b) Propanoic acid and ethanol

(c) Acetic acid and 1-propanol

(d) Acetic acid and 2-propanol



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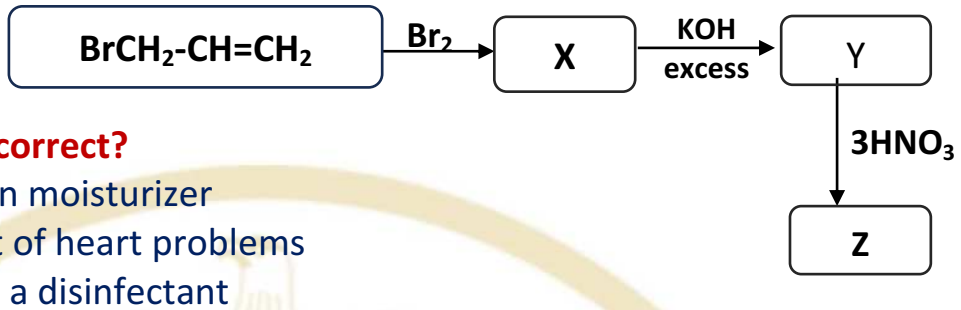
30- The following diagram shows some reactions of organic compounds:



- Which of the following is correct?

(a) Y: An explosive and a skin moisturizer

(b) Z: Used in the treatment of heart problems

(c) Y: An alcoholic drink and a disinfectant

(d) Z: Used in hydraulic brakes.

31- Which of the following represents the correct order of the processes required to obtain the simplest tertiary alcohol?

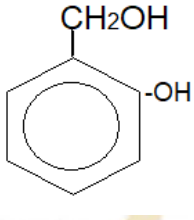
(a) Dehydration of 2-butanol followed by catalytic hydration

(b) Dehydration of 2-methyl-1-propanol followed by catalytic hydration

(c) Addition of HBr to 2-methyl butene followed by alkaline hydrolysis

(d) Addition of HBr to 1-butene followed by alkaline hydrolysis

32- Which of the following represents the compound produced from the oxidation of the opposite compound?



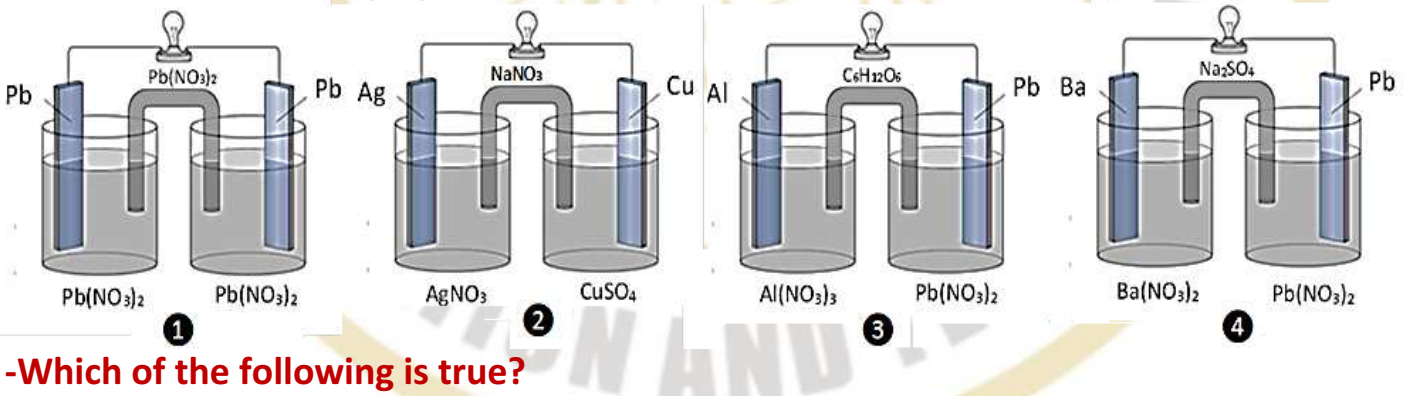
(a) It reacts with Na and does not react with Na_2CO_3

(b) It reacts with NaOH and with HCl

(c) It reacts with NaOH and reacts with Na_2CO_3

(d) It reacts with Na_2CO_3 , and with HCl

33- From the following figures:



-Which of the following is true?

(a) Only cells 1 and 2 produce an electric current under standard conditions

(b) Cell 2 does not produce an electric current because both Cu and Ag have negative Oxidation potentials

(C) Cells 3 and 4 do not produce an electric current because of the electrolyte

(D) Cells 1 and 4 produce an electric current when $NaNO_3$ is used as the electrolyte Under standard conditions

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34- Three consecutive elements in the first transition series are (X), (Y), and (Z).
Element (X): All its compounds are paramagnetic.
Element (Y): Some of its compounds are paramagnetic, and some are diamagnetic.
Element (Z): All its compounds are diamagnetic.
- Which of the following represents groups of elements (X, Y and Z) in the periodic table?

	(X)	(Y)	(Z)
a)	IB	IIB	IIIB
b)	8	IB	IIB
c)	IIIB	IVB	VB
d)	VB	VIB	VIIB

35- If 7.3 g of pure hydrochloric acid is required to complete the reaction with calcium Carbonate in a sample of 12.5 g
- Which of the following is correct? (Ca=40, C=12, O=15, Cl=35.5, H=1)
(a) The sample is pure and purity percentage 100%.
(b) The sample is impure, and contains 2.5g of $CaCO_3$
(c) The sample is impure, and the percentage of impurities is 20%.
(d) The sample is impure, and the percentage of impurities is 80%.
36- When titrating two different solutions of acid (X) with two different solutions of base (Y), the results were as follows:

	M_x	V_x	M_Y	V_Y
First experiment	**0.2M**	**10mL**	**0.1M**	**10mL**
second experiment	**Mx**	**40mL**	**0.25M**	**20mL**

From the previous results, the concentration of the acid solution in the second experiment is:
a) 0.125M b) 0.025M c) 0.250M d) 0.050M
37- One of the calcium salts (Ca^{2+}) is sparingly soluble in water. Its solubility is (1×10^{-4} mol/L).
- Given that the solubility product (Ksp) of this salt is (1.08×10^{-18}) at a certain temperature.
- Which of the following represents the anion of this salt?
(a) Carbonate (CO_3^{2-})
(b) Fluoride (F^-)
(c) Phosphate (PO_4^{3-})
(d) Sulphate (SO_4^{2-})

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38- From the following ionic equilibrium: $CH_3COOH \rightleftharpoons CH_3COO^- + H^+$

-Which of the following is correct when each of the following substances is added?

(a) Diluted HCl: The concentration of hydrogen ions increases, and the pH increases.

(b) Water: The concentration of hydrogen ions decreases, and the pOH value increases.

(c) NaOH solution: The concentration of hydrogen ions decreases, and the pH increases.

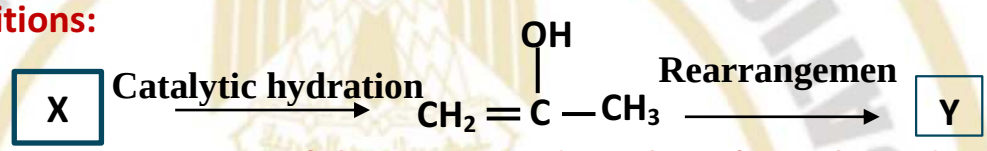
(d) C_2H_5OH: The concentration of hydrogen ions increases, and the pOH value decreases

39- Copper (II) sulfate solution with a concentration of (0.2 M) and a volume of (600 mL) , electric current with intensity (96.5A) is passed through it.

-The time required for reduction and complete deposition of copper cations on the cathode is:

a) 180 sec b) 180 min c) 240 sec d) 240 min

40- The following diagram represents the reactions of some organic compounds under suitable conditions:



- Which of the following is an isomer of the compound resulting from the reduction of Compound (Y)?

a) Propanal b) Ethyl methyl ether c) 2-propanol d) Propanone

41- The following reactions take place under suitable conditions to obtain compounds (A), (B), and (C) as follows:

Given that (B) is an unsaturated, asymmetric hydrocarbon.

- Which of the following represents compounds (A), (B), and (C)?

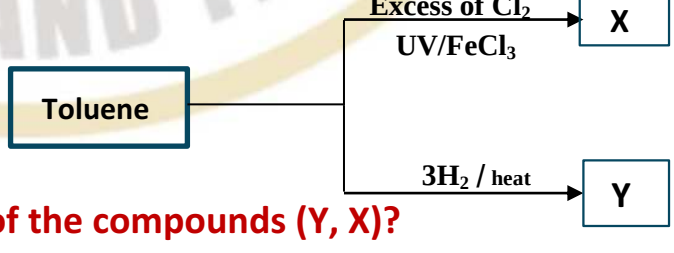
(a) (A): propyl hydrogen sulphate , (B): propyne , (C): propane

(b) (A) ethyl hydrogenated sulphate , (B) Ethene , (C) Ethane

(C) (A) butyl Hydrogenated sulphate , (B) 2-butene , (C) butane

(d) (A) butyl Hydrogenated sulphate, (B) 1-butene , (C) butane

42 The following reactions were carried out under suitable conditions:



-Which of the following represents each of the compounds (Y, X)?

(a) X: meta-chloro toluene , Y: methyl benzene

(b) X: 3,5-dichlorotoluene , Y: methyl cyclohexane

(C) X: para-chloro toluene , Y: cyclohexane

(d) X: 2, 4, 6-Trichloro toluene , Y: Methyl cyclohexane

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43- Which of the following represents the correct order of processes required to obtain a detergent from the simplest alkyne?

(a) Cyclic polymerization – Sulphonation – Alkylation – Neutralization

(b) Cyclic polymerization – Alkylation – Sulfonation – Neutralization

(c) Rapid heating and cooling – UV chlorination – Sulfonation

(d) Rapid heating and cooling – Sulfonation – UV chlorination

44- From the following diagram:

- Which of the following represents compound (C)?

-If you know that compound (C) is used in the manufacture of explosives

-Which of the following represents the IUPAC name of compound (B) and the physical state of compound (D) under normal conditions?

(A) (B): Ethylene, (D): Liquid

(B) (B): Ethane, (D): Gaseous

(C) (B): Ethane, (D): Gaseous

(D) (B): Ethene, (D): Liquid

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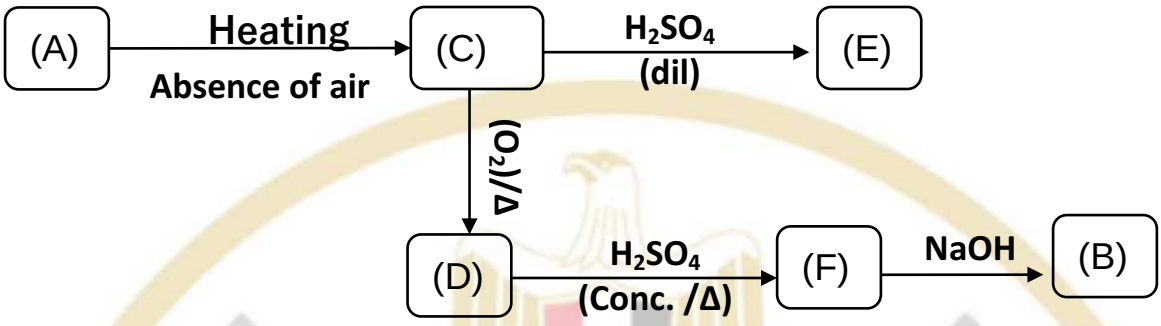
Essay Questions:

45- The following diagram illustrates some reactions involving iron compounds:



-Answer the following questions:

(1) From the diagram above, write the chemical names of the compounds that, when Strongly heated, yield substance (D).

(2) What is the name of the iron compound produced by the reaction of (D) with Concentrated hydrochloric acid?

(3) Write the chemical formula for compound (F).

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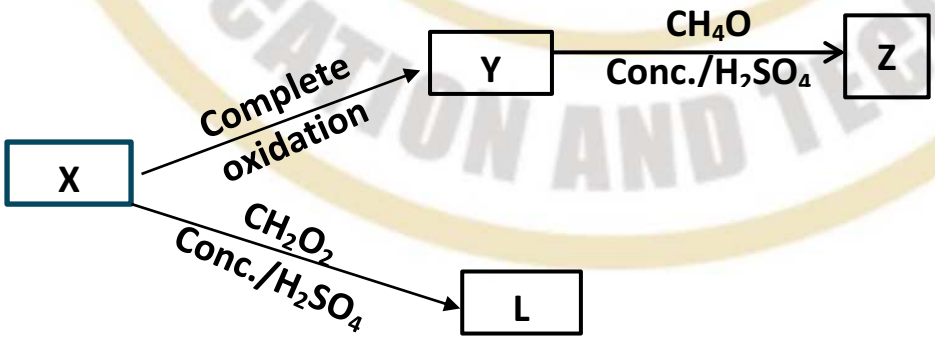
46- The following diagram shows some reactions of organic compounds:

- Compound (Y) is used in the manufacture of rayon and (Z, L) are isomers, write the chemical formula for each of (X, Y, Z, L).



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موقع الدكتور محمد رزق التعليمي

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موقع الدكتور محمد رزق
Dr.MoRizK

اجابه الامتحان الاسترشادي العاشر كمياء لغات انجليزي 2026 موقع الدكتور محمد رزق التعليمي

رقم السؤال	الاجـــــــابة
1	A
2	C
3	B
4	C
5	A
6	C

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7	B
8	C
9	A

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10	D
11	B
12	A
13	A
14	D
تم بواسطه موقع الدكتور محمد رزق التعليمي	
15	D
16	D
17	A
18	D
19	C
20	B
21	B

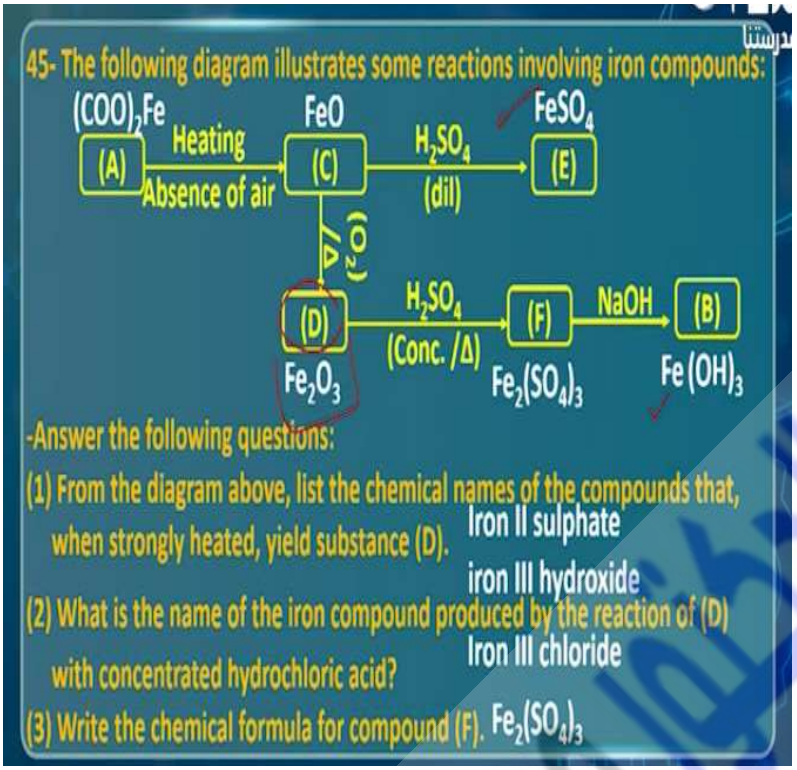
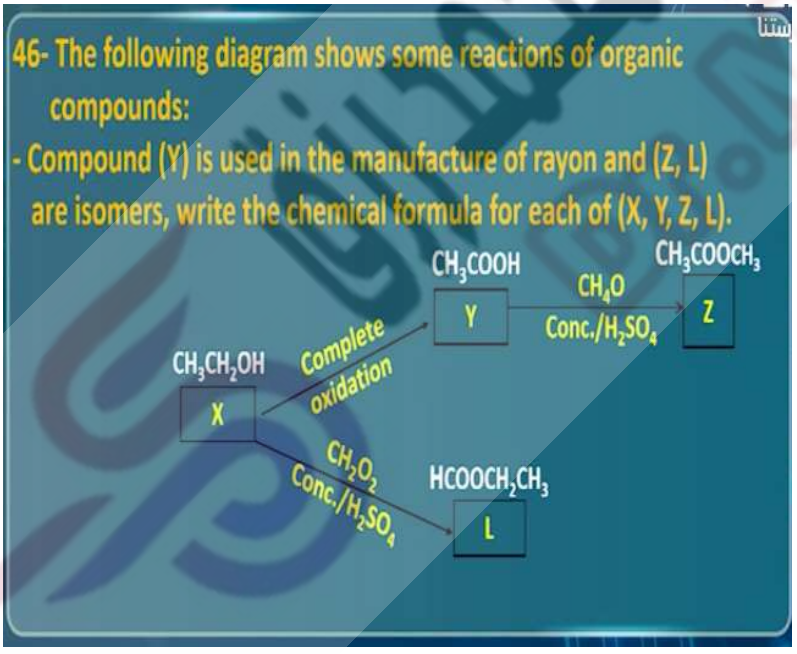
موقع الدكتور محمد رزق معلم الكيمياء التعليمي D.M.RAZK

22	A
23	C
24	A
25	D
تم بواسطه موقع الدكتور محمد رزق التعليمي	
26	B
27	D
28	B
29	C
30	B
31	B
32	C

موقع الدكتور محمد رزق معلم الكيمياء التعليمي D.M.RAZK

C	33
B	34
C	35
C	36
C	37
C	38
C	39
B	40
D	41
D	42
B	43
D	44

D.M.RAZK موقع الدكتور محمد رزق معلم الكيمياء التعليمي

	45
	45

تم الاجابه من خلال موقع الدكتور محمد رزق التعليمي

والمصدر قناه مدرستنا 3

موقع الدكتور محمد رزق التعليمي

امسح الباركود بالموبيل لتثبيت التطبيق وتحميل كل الملازم مجانا وبسرعه

MR

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موقع الدكتور محمد رزق
Dr.MoRizK